

CLAIMS

1. A method of selectively inhibiting wheel rotation of a vehicle during
5 brake failure, the method comprising:
determining a brake force lost corresponding to a failed brake;
determining a brake force reserve corresponding to at least one non-failed
brake;
determining at least one command brake force based on the brake force
10 lost and the brake force reserve; and
applying the at least one command brake force to the at least one non-
failed brake wherein at least one of an undesired yaw moment and a yaw moment rate of
change are limited to predetermined values.
- 15 2. The method of claim 1 wherein determining the brake force reserve
comprises determining a limit brake force and a desired brake force.
3. The method of claim 1 wherein the command brake force for a same side
non-failed brake is based on the brake force lost when the brake force lost is about equal
20 to or less than the brake force reserve.
4. The method of claim 1 wherein the command brake force for a same side
non-failed brake is based on the brake force reserve when the brake force lost is greater
than the brake force reserve.
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5. The method of claim 4 wherein the command brake force for at least one
opposite side non-failed brake is based on the brake force lost and the brake force reserve
when the brake force lost is greater than the brake force reserve, and less than or about
equal to the brake force reserve added to a threshold value.
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6. The method of claim 4 wherein the command brake force for at least one opposite side non-failed brake is based on an initial yaw moment and a total brake force.

5 7. The method of claim 1 wherein the brake failure comprises a brake actuator failure.

8. The method of claim 1 further comprising:
determining a steering correction to counter a yaw moment generated
10 from asymmetric braking based on a predetermined limit; and
applying the steering correction.

9. The method of claim 8 wherein the command brake force for at least one opposite side non-failed brake is based on the brake force lost, the brake force reserve,
15 and a nominal brake force distribution when the steering correction is within the predetermined limit.

10. The method of claim 8 wherein the command brake force for at least one opposite side non-failed brake is based on the yaw moment and a nominal brake force
20 distribution when the steering correction is outside the predetermined limit.

11. A computer usable medium including a program for selectively inhibiting wheel rotation of a vehicle during brake failure, the computer usable medium comprising:

- 5 computer readable program code for determining a brake force lost corresponding to a failed brake;
- computer readable program code for determining a brake force reserve corresponding to at least one non-failed brake;
- computer readable program code for determining at least one command brake force based on the brake force lost and the brake force reserve; and
- 10 computer readable program code for applying the at least one command brake force to the at least one non-failed brake wherein at least one of an undesired yaw moment and a yaw moment rate of change are limited to predetermined values.

12. The computer usable medium of claim 11 wherein the computer readable
15 program code for determining the brake force reserve comprises computer readable program code for determining a limit brake force and a desired brake force.

13. The computer usable medium of claim 11 wherein the command brake
20 force for a same side non-failed brake is based on the brake force lost when the brake force lost is about equal to or less than the brake force reserve.

14. The computer usable medium of claim 11 wherein the command brake
force for a same side non-failed brake is based on the brake force reserve when the brake
force lost is greater than the brake force reserve.

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15. The computer usable medium of claim 14 wherein the command brake
force for at least one opposite side non-failed brake is based on the brake force lost and
the brake force reserve when the brake force lost is greater than the brake force reserve,
and less than or about equal to the brake force reserve added to a threshold value.

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16. The computer usable medium of claim 14 wherein the command brake force for at least one opposite side non-failed brake is based on an initial yaw moment and a total brake force.

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17. The computer usable medium of claim 11 further comprising:
computer readable program code for determining a steering correction to counter a yaw moment generated from asymmetric braking based on a predetermined limit; and

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computer readable program code for applying the steering correction.

18. The computer usable medium of claim 17 wherein the command brake force for at least one opposite side non-failed brake is based on the brake force lost, the brake force reserve, and a nominal brake force distribution when the steering correction is within the predetermined limit.

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19. The computer usable medium of claim 17 wherein the command brake force for at least one opposite side non-failed brake is based on the yaw moment and a nominal brake force distribution when the steering correction is outside the predetermined limit.

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20. A vehicle brake system comprising:
a plurality of brake assemblies for selectively inhibiting wheel rotation of
the vehicle wherein a command brake force is applied to at least one non-failed brake;
5 and
a controller operably attached to the brake assemblies, the controller
comprising:
means for determining a brake force lost corresponding to a failed brake;
means for determining a brake force reserve corresponding to a non-failed
10 brake; and
means for determining the command brake force based on the brake force
lost and the brake force reserve;
wherein at least one of an undesired yaw moment and a yaw moment rate
of change are limited to a predetermined value.

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21. The vehicle brake system of claim 20 further comprising an active steer
system operably attached to the controller for applying a steering correction.